Space Weather Forecast

Issued on Friday 22 November 2024 at 01:26 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing S1/Minor Solar Radiation Storms with a Slight chance of Minor Radio Blackouts (R1) throughout. Periods of slight chance of Minor Geomagnetic Storm (G1) to start and end forecast period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low during the past 24 hours, with background C-class flares. The largest of which was a C5.9 at 21/1807.

There are currently up to ten sunspot regions on the disc, two of which are unnumbered. The main regions on the disc at present include a magnetically complex region in the southeast. in the southeast. A sunspot group in the southwest appears to have developed quickly, and is one to watch. Significant magnetic looping over the eastern limb suggests that there are further spots to rotate onto the Earth-facing disc. The first becoming visible in the southeast. The majority of the remaining groups are simple and with little magnetic complexity.

Solar Wind / Geomagnetic Activity: Solar winds continued to show a Slow to Slightly Elevated regime. The number of particles in the solar wind was at near average or just above for much of the 21 Nov, easing to below average towards midnight UTC. The associated magnetic field was variable, generally Weak to Moderate. The north-south component was generally Weak and variable, trending positive. Quiet to Unsettled geomagnetic activity throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a slightly falling chance of Moderate flares with the departure of two recent larger sunspot groups.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

A pair of 'coronal holes' (sources of fast solar wind) are due in the forecast period: firstly within the first 12 hours and again later in the UTC weekend. There is a slight chance of Minor Geomagnetic Storm (G1) for both, with an intervening lull.

Energetic Particles / Solar Radiation: Ongoing S1/Minor Solar Radiation storms are expected to continue through Day 1 (22 Nov) following on from a proton storm from around the western limb.

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Proton flux levels are likely to take a few days to recover back to background levels from this event.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	10	1	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	No	40	40	40	40
Very Active	R3-R5 (X Class)	No	1	1	1	1

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	Yes	100	70	40	20
Very Active	≥ S3 *	No	20	10	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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